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On the Opposition of the Minor Planet Melpomene as a means of determining the Solar Parallax. By Mr. David Gill.

The accompanying list contains the Stars of Comparison to be observed with *Melpomene*. The same remarks apply to them as to the case of *Mars* and *Ariadne*, for which the comparison stars were published in the last number of the *Monthly Notices*.

In the case of *Melpomene* the necessity for Meridian observations of the comparison stars is specially urgent, because from lack of suitable stars a very rigid system of heliometer triangulation cannot be arranged.

I am indebted to Dr. Auwers of Berlin for the daily places of the planet, by which I have been enabled to select the stars of comparison.

I had also intended to observe the planet *Iris*, but this could not be done advantageously without taking up a new station in about 20° N. latitude. The circumstances of the opposition of *Melpomene* are so little less favourable than *Iris* that the risk and loss of time incurred appeared to more than counterbalance the advantages offered by the somewhat nearer approach of *Iris*.

The circumstances of the opposition of *Iris*, are, however, very favourable for the application of Dr. Galle's method, and it is to be hoped the opportunity will not be lost.

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Stars to be observed with Melpomene at Opposition, 1877.

Adopted Name of Star.	Approximate. 1877·0 R.A. h m s	Approximate. 1877·0 Dec. ° ′	Mag. in Berlin Academy Star Cat. Mag.	No. in Weisse's Bessel.	Mag.	No. in Schjellerup.	Mag.	No. in Lalande.	Mag.	Remarks.
a	4 17 16	+2 45	8	iv. 326	8	...	...	8266	8½	
β	4 18 1	2 12	8	340	8	1396 1397	8·5 8			
γ	4 19 39	0 46	7–8	381	8	...	...	8348 8349	7 8	
b	4 22 26	2 6	8–9	...	...	...	...	8437	8	
δ	4 27 14	0 46	8	544	8	...	...	8601	8½	
c	4 27 18	3 11	9	...	...	...	...	...	...	617 Arg. Zones +3°
d	4 29 24	1 11	8–9	...	...	...	...	...	...	777 " " +1°
e	4 30 38	2 20	9	...	...	...	...	...	...	737 " " +2°
f	4 32 46	1 54	8–9	685	8–9					
g	4 34 33	2 17	8	727	8					
y	4 34 39	0 44	8	...	...	...	...	8824	8	
h	4 35 8	+1 40	...	...	...	1499	8·5	...	...	798 Arg. Zones +1°

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Adopted Name of Star.	Approximate. 1877·0 R.A. h m s	Approximate. 1877·0 Dec. ° ′	Mag. in Berlin Academy Star Cat. Mag.	No. in Weisse's Bessel.	Mag.	No. in Schjellerup.	Mag.	No. in Lalande.	Mag.	Remarks.
i	4 36 33	+2 11	8–9	774	8–9	...	...	8883	8½	
e	4 36 40	0 52	8–9	777	8–9	1512	8·7			
k	4 38 54	2 25	8–9	817	8–9					
l	4 43 9	2 0	8	902	8	...	...	9066	8	
m	4 44 26	0 56	7	936	7	...	...	9101	7	
x	4 45 51	1 38	...	...	...	1564	8·3	...	...	837 Arg. Zones +1°
n	4 49 46	2 59	8	1067	8	1581	8·5	9268	7	
o	4 49 48	1 51	8	...	...	...	...	9270	8	
r	4 53 39	3 6	8–9	...	...	...	...	9400		
s	4 56 3	1 52	8–9	1223	8–9					
t	4 58 35	+2 29	8–9	...	...	...	...	9561	8½	

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Plan of Heliometric Triangulation of Stars to be compared with Melpomene.

Stars.	Mag.	A.R. of Middle Point. h m s	Dec. of Middle Point. ° ′	Position Angle. °	Dist. ′
a—β	8—8	4 17 38	+2 29	341	35
a—*b*	8—8-9	19 51	2 26	297	87
β—*b*	8—8-9	20 14	2 9	275	66
β—γ	8—7-8	18 50	1 29	344	89
γ—*b*	7-8—8-9	21 2	1 26	208	90
γ—δ	7-8—8	23 27	0 46	270	114
b—*c*	8-9—9	24 52	2 39	228	98
b—*d*	8-9—8-9	25 55	1 39	298	118
b—δ	8-9—8	24 50	1 26	318	108
δ—*d*	8—8-9	28 19	0 59	232	41
δ—*e*	8—9	28 56	1 33	208	107
δ—*f*	8—8-9	30 0	1 20	231	107
δ—*y*	8—8	30 57	0 45	271	111
d—*e*	8-9—9	30 1	1 46	195	71
d—*f*	8-9—8-9	31 5	1 33	230	66
d—*g*	8-9—8	31 59	1 44	230	102
d—*h*	8-9—8-9	32 16	1 26	251	91
d—*i*	8-9—8-9	32 59	1 41	241	123
d—ε	8-9—8-9	33 2	1 1	280	111
d—*y*	8-9—8	32 2	0 57	289	83
f—*g*	8-9—8	33 40	2 6	229	35
f—*h*	8-9—8-9	33 57	1 47	292	38
f—*i*	8-9—8-9	34 40	2 2	253	59
f—*k*	8-9—8-9	35 50	2 10	251	97
f—ε	8-9—8-9	34 43	1 23	317	85
f—*y*	8-9—8	33 43	1 19	338	76
g—*h*	8—8-9	34 51	1 59	346	38
g—*i*	8—8-9	35 33	2 14	281	31
g—*k*	8—8-9	36 44	2 21	263	66
g—ε	8—8-9	35 37	1 35	339	91
g—*y*	8—8	34 36	1 31	359	93
e—*f*	9—8-9	31 42	2 7	309	41
e—*g*	9—8	32 36	2 18	273	59
e—*h*	9—8-9	32 53	2 0	301	79
e—*i*	9—8-9	33 36	2 16	276	89
e—*y*	9—8	4 32 38	+1 32	328	113

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Stars.	Mag.	A.R. of Middle Point. h m s	Dec. of Middle Point. ° ′	Position Angle. °	Dist.
y—*h*	8—8-9	4 34 54	+1 12	187	56
y—*i*	8—8-9	35 36	1 28	198	92
y—*k*	8—8-9	36 47	1 35	184	119
y—*ε*	8—8-9	35 39	0 48	255	31
h—*i*	8-9—8-9	35 51	1 56	215	37
h—*k*	8-9—8-9	37 1	2 3	231	72
h—*ε*	8-9—8-9	35 54	1 16	334	53
i—*k*	8-9—8-9	37 44	2 18	248	38
i—*l*	8-9—8	39 51	2 6	276	100
i—*ε*	8-9—8-9	36 37	1 32	359	79
ε—*k*	8-9—8-9	37 47	1 39	200	99
ε—*l*	8-9—8	39 55	1 26	235	119
ε—*m*	8-9—7	40 33	0 54	268	117
k—*l*	8-9—8	41 2	2 12	291	68
k—*m*	8-9—7	41 40	1 41	317	122
k—*x*	8-9—8	42 23	2 2	294	114
l—*m*	8—7	43 48	1 28	343	67
l—*n*	8—8-9	46 28	2 30	239	115
l—*o*	8—8	46 29	1 56	275	100
l—*x*	8—8	44 30	1 49	299	46
m—*o*	7—8	47 7	1 24	236	98
m—*x*	7—8	45 9	1 17	207	48
x—*n*	8—8-9	47 48	2 18	216	100
x—*o*	8—8	47 50	1 45	258	61
o—*r*	8—8-9	51 44	2 29	218	95
o—*s*	8—8-9	52 56	1 52	269	94
n—*o*	8-9—8	49 47	2 25	0	68
n—*r*	8-9—8-9	51 43	3 3	263	59
n—*s*	8-9—8-9	52 55	2 26	305	116
r—*s*	8-9—8-9	54 51	2 29	334	82
r—*t*	8-9—8-9	56 7	2 48	297	83
s—*t*	8-9—8-9	4 57 19	+2 11	226	53

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Plan of Observation of Melpomene and Comparison Stars.

[P denotes the planet; other letters the stars in the preceding list.]

Date.	Star of Comparison.	Mag.	Hour Angle −4ʰ (Evening Observations). R.A. of Middle Point.			Dec. of Middle Point.		Position Angle.	Distance.	Hour Angle +4ʰ (Morning Observations). R.A. of Middle Point.			Dec. of Middle Point.		Position Angle.	Distance.
			h	m	s	°	′	°	′	h	m	s	°	′	°	′
Nov. 12	P—*t*	8–9	4	57	19	+2	28	267·9	38	4	57	11	+2	27	266·2	42
	P—*n*	8–9		52	54	2	43	108·4	99		52	47	2	42	109·9	96
	P—*o*	8		52	56	2	9	68·7	101		52	48	2	8	68·6	97
13	P—*t*	8–9		56	55	2	26	263·3	50		56	48	2	25	262·3	54
	P—*n*	8–9		52	31	2	41	113·5	90		52	24	2	40	115·3	87
	P—*o*	8		52	32	2	7	68·6	88		52	25	2	6	68·5	84
14	P—*t*	8–9		56	31	2	24	260·7	63		56	24	2	23	260·1	66
	P—*n*	8–9		52	7	2	39	119·6	81		52	0	2	38	121·8	79
	P—*o*	8		52	8	2	5	68·3	75		52	0	2	4	68·1	71
15	P—*t*	8–9		56	7	2	22	259·3	76		55	59	2	21	258·9	79
	P—*r*	8–9		53	39	2	40	180·3	51		53	31	2	39	183·8	53
	P—*o*	8		51	43	2	3	67·4	62		51	36	2	2	67·1	58
16	P—*t*	8–9		55	41	2	20	258·5	89		55	32	2	19	258·4	93
	P—*r*	8–9		53	13	2	39	193·4	56		53	4	2	38	197·2	59
	P—*o*	8		51	18	2	1	65·6	49		51	9	2	0	64·6	45
17	P—*x*	8	4	48	53	+1	53	71·9	96	4	48	44	+1	52	71·6	91

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Date.	Star of Comparison	Mag.	Hour Angle -4^h (Evening Observations).							Hour Angle $+4^h$ (Morning Observations).							
			R.A. of Middle Point.			Dec. of Middle Point.		Position Angle.	Distance.	R.A. of Middle Point.			Dec. of Middle Point.		Position Angle.	Distance.
			h	m	s	°	′	°	′	h	m	s	°	′	°	′
Nov. 17	P—*r*	8–9	4	52	47	+2	37	204·1	64	4	52	38	+2	36	207·3	67
	P—*s*	8–9		53	59	2	0	284·3	64		53	50	1	59	282 6	68
18	P—*x*	8		48	26	1	51	71·1	82		48	17	1	51	70·7	77
	P—*r*	8–9		52	20	2	36	212·8	73		52	11	2	36	215.2	76
	P—*s*	8–9		53	32	1	58	279·5	77		53	23	1	58	278·3	81
19	P—*l*	8		46	37	2	1	89·1	104		46	28	2	1	89·6	99
	P—*s*	8–9		53	4	1	57	276·1	90		52	55	1	57	275·3	94
	P—*o*	8		49	57	1	56	22·1	11		49	48	1	56	358·2	10
20	P—*l*	8		46	9	2	0	90·7	90		46	0	1	59	91·2	85
	P—*s*	8–9		52	36	1	55	273·8	104		52	26	1	54	273·8	108
	P—*o*	8		49	28	1	55	308·9	13		49	19	1	54	296·4	16
21	P—*l*	8		45	41	1	58	92·6	76		45	31	1	58	93·3	71
	P—*n*	8–9		48	59	2	28	200·6	67		48	50	2	28	204·2	69
	P—*o*	8		49	0	1	54	283·1	25		48	50	1	54	279·7	29
22	P—*l*	8		45	12	1	57	95·1	62		45	2	1	57	96·2	57
	P—*n*	8–9		48	30	2	27	210·5	75		48	20	2	27	213·5	78
	P—*o*	8		48	31	1	53	275·2	39		48	21	1	53	273·8	44
23	P—*x*	8		46	3	1	45	22·0	16		45	53	1	45	4·0	14
	P—*l*	8	4	44	42	+1	56	98·9	47	4	44	32	+1	56	100·5	42

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	P—*o*	8	4	48	1	+1	52	271·8	53	4	47	52	+1	52	271·3	58
24	P—*l*	8		44	12	1	56	105·6	33		44	3	1	56	109·0	28
	P—*m*	7		44	51	1	24	12·8	57		44	41	1	24	7·8	55
	P—*o*	8		47	32	1	51	270·1	68		47	22	1	51	269·9	73
25	P—*k*	8–9		41	35	2	7	113·6	88		41	25	2	7	115·1	83
	P—*m*	7		44	21	1	23	357·4	54		44	11	1	23	352·0	54
	P—*o*	8		47	2	1	52	269·2	83		46	52	1	52	269·1	88
26	P—*k*	8–9		41	5	2	7	118·8	75		40	55	2	7	120·9	70
	P—*m*	7		43	51	1	23	341·7	56		43	41	1	23	336·9	57
	P—*o*	8		46	32	1	53	268·8	98		46	22	1	53	268·8	103
27	P—*k*	8–9		40	35	2	7	126·0	62		40	25	2	7	129·0	58
	P—*l*	8		42	42	1	54	229·3	18		42	32	1	54	237·7	22
	P—*m*	7		43	20	1	22	328·0	62		43	10	1	22	324·1	65
28	P—*h*	8–9		38	11	1	44	84·9	92		38	1	1	44	84·6	87
	P—*l*	8		42	12	1	54	247·6	31		42	1	1	54	250·6	36
	P—*m*	7		42	50	1	22	317·4	71		42	40	1	22	314·5	74
29	P—*h*	8–9		37	41	1	44	84·0	77		37	31	1	44	83·5	72
	P—*k*	8–9		39	34	2	7	151·9	42		39	24	2	7	157·8	40
	P—*l*	8		41	41	1	54	254·8	46		41	31	1	54	256·4	50
30	P—*m*	7		41	49	1	22	303·7	94		41	38	1	22	302·2	98
	P—*l*	8		41	11	1	54	258·8	60		41	1	1	54	259·8	65
	P—*g*	8	4	36	53	+2	2	112·4	75	4	36	43	+2	2	113·7	71

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Date.	Star of Comparison.	Mag.	Hour Angle -4^h (Evening Observations).							Hour Angle $+4^h$ (Morning Observations).						
			R.A. of Middle Point.			Dec. of Middle Point.		Position Angle.	Distance.	R.A. of Middle Point.			Dec. of Middle Point.		Position Angle.	Distance.
			h	m	s	°	′	°	′	h	m	s	°	′	°	
Dec. 1	P—*l*	8	4	40	40	+1	54	261·6	75	4	40	30	+1	54	262·3	80
	P—*f*	8–9		35	28	1	52	93·5	81		35	19	1	52	93·6	77
	P—*k*	8–9		38	32	2	7	196·7	38		38	23	2	7	203·4	39
2	P—*l*	8		40	10	1	55	263·6	90		40	0	1	55	264·1	95
	P—*f*	8–9		34	59	1	52	93·6	66		34	49	1	52	93·6	61
	P—*k*	8–9		38	2	2	7	216·3	44		37	52	2	7	221·5	46
3	P—*l*	8		39	39	1	56	265·2	105		39	29	1	56	265·6	110
	P—*f*	8–9		34	28	1	52	93·3	51		34	18	1	52	93·1	46
	P—*i*	8–9		36	22	2	0	196·3	21		36	11	2	0	209·0	22
4	P—*d*	8–9		31	12	1	33	70·7	126		31	2	1	33	69·7	122
	P—*f*	8–9		33	58	1	53	92·1	36		33	48	1	53	91·5	31
	P—*k*	8–9		37	2	2	9	240·0	65		36	52	2	9	242·5	69
5	P—*d*	8–9		30	43	1	32	67·4	113		30	33	1	32	66·1	109
	P—*f*	8–9		33	28	1	54	88·7	21		33	19	1	54	86·1	16
	P—*k*	8–9		36	32	2	10	246·7	77		36	22	2	10	248·5	81
6	P—*e*	9		31	55	2	8	121·2	45		31	45	2	8	124·0	40
	P—*f*	8–9		32	59	1	55	67·4	7		32	49	1	55	51·5	4
	P—*i*	8–9		34	53	2	4	254·1	52		34	43	2	5	256·2	57
7	P—*e*	9	4	31	26	+2	10	130·9	32	4	31	16	+2	11	136·5	28

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	P—*f*	8-9	4	32	30	+1	56	303·0	10	4	32	20	+1	57	294·8	14
	P—*i*	8-9		34	23	2	6	259·7	66		34	13	2	7	261·1	71
8	P—*e*	9		30	57	2	11	152·3	20		30	48	2	12	164·3	18
	P—*f*	8-9		32	1	1	57	289·4	24		31	51	1	58	298·1	29
	P—*d*	8-9		29	15	1	36	49·9	79		29	6	1	37	47·1	76
9	P—*c*	9		28	49	2	38	145·4	80		28	40	2	39	147·9	77
	P—*g*	8		32	27	2	11	259·3	64		32	17	2	12	260·8	69
	P—*d*	8-9		28	47	1	38	40·7	71		28	38	1	39	37·2	69
10	P—*b*	8-9		25	55	2	7	88·7	104		25	46	2	8	88·0	100
	P—*g*	8		31	59	2	12	263·7	78		31	50	2	13	264·8	82
	P—*d*	8-9		28	19	1	40	29·5	66		28	10	1	41	25·6	65
11	P—*b*	8-9		25	28	2	9	86·2	91		25	19	2	10	85·2	87
	P—*g*	8		31	31	2	14	266·9	91		31	23	2	15	267·7	95
	P—*d*	8-9		27	52	1	41	17·3	64		27	43	1	42	13·1	64
12	P—*b*	8-9		25	1	2	11	82·6	78		24	53	2	12	81·2	74
	P—*g*	8		31	5	2	16	269·5	104		30	56	2	17	270·2	108
	P—*d*	8-9		27	25	1	44	4·8	65		27	16	1	45	1·1	66
13	P—*b*	8-9		24	35	2	13	77·6	66		24	26	2	14	75·5	62
	P—*c*	9		27	1	2	45	189·5	52		26	53	2	46	194·5	51
	P—*e*	9		28	41	2	20	270·2	58		28	33	2	21	270·4	63
14	P—*b*	8-9		24	10	2	15	70·1	55		24	2	2	16	67·2	52
	P—*c*	9	4	26	36	+2	48	204·7	51	4	26	27	+2	49	209·4	52

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Date.	Star of Comparison.	Mag.	Hour Angle -4^h (Evening Observations). R.A. of Middle Point.			Dec. of Middle Point.		Position Angle.	Distance.	Hour Angle $+4^h$ (Morning Observations). R.A. of Middle Point.			Dec. of Middle Point.		Position Angle.	Distance.
			h	m	s	°	′	°	′	h	m	s	′	°	°	′
	P—*e*	9	4	28	16	+2	22	273·8	71	4	28	7	+2	23	274·6	75
Dec. 15	P—*β*	8		21	33	2	21	80·7	107		21	25	2	22	79·5	104
	P—*c*	9		26	11	2	50	218·8	53		26	4	2	51	223·2	55
	P—*e*	9		27	51	2	25	276·4	84		27	44	2	26	277·2	88
16	P—*β*	8		21	9	2	23	76·6	96		21	1	2	24	75·1	93
	P—*c*	9		25	47	2	52	231·2	58		25	39	2	53	234·6	60
	P—*e*	9		27	27	2	27	278·6	96		27	20	2	28	279·2	100
17	P—*a*	8		20	23	2	42	93·3	94		20	16	2	43	92.3	90
	P—*b*	8–9		22	58	2	23	25·4	37		22	51	2	24	19·2	37
	P—*c*	9		25	24	2	55	241·2	65		25	17	2	56	244·0	68
18	P—*a*	8		20	1	2	45	89·9	82		19	54	2	46	88·5	79
	P—*b*	8–9		22	36	2	26	7·3	40		22	29	2	27	2·1	40
	P—*c*	9	4	25	2	+2	58	249·2	73	4	24	55	+2	59	251·5	75